

Two new species of *Stylidium* Willd. (Stylidiaceae) from north Queensland

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Summary

Bean, A.R. (1999). Two new species of *Stylidium* Willd. (Stylidiaceae) from north Queensland. *Austrobaileya* 5(2): 323-330. Two new *Stylidium* species, *S. leiophyllum* and *S. ramosissimum*, and their closest relative, *S. eriorhizum* R.Br. are described, illustrated and distinguished in a key. Distribution maps, and notes on conservation status are provided.

Key words: *Stylidium*, Stylidiaceae, Australian flora, key, *Stylidium eriorhizum*, *Stylidium leiophyllum*, *Stylidium ramosissimum*.

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Introduction

The genus *Stylidium* occurs throughout Australia, especially in the south-west and across the tropics. A few species also extend to Malesia (Slooten 1954) and into south-east Asia (Anon. 1972). A monograph of the genus was provided by Mildbraed (1908), who provided a subgeneric and sectional classification of the genus. Mildbraed placed *S. eriorhizum* R.Br. in *S. sect. Debiles* Milbraed.

S. eriorhizum and the two new species described here all have a thick woolly base at ground level, above which the leaves emerge.

The thick woolly plant base is rare in the genus, being otherwise known in *S. eglandulosum* F.Muell. (Qld, N.S.W.) and *S. humphreysii* Carlquist (W.A.).

S. eriorhizum and the two newly described species form a rather distinctive group within the genus, most noticeably by virtue of the woolly plant base and broad rosetted leaves with a hair-like mucro, but also by the indeterminate central rachis of the inflorescence, the mucronate bracts and the more or less spherical seeds with a colliculose surface.

Key to the species of the *Stylidium eriorhizum* group

1. Inflorescence branches and bracts glabrous, leaves (including petioles)
9–14 mm long ***S. ramosissimum***
Inflorescence branches and bracts glandular-hairy, leaves (including
petioles) 20–60(–100) mm long 2
2. Leaf margins hairy; bracts 1.5–2.5 mm long; calyx lobes 1.0–1.7 mm long. . . ***S. eriorhizum***
Leaf margins glabrous; bracts 3.5–6.5 mm long; calyx lobes 2.4–2.8 mm long. . . ***S. leiophyllum***

Stylidium eriorhizum R.Br., Prodr. 569 (1810); *Candollea eriorhiza* (R.Br.) F.Muell., Syst. Census Austral. pl. 86 (1883). **Type:** Queensland. PORT CURTIS DISTRICT: Thirsty Sound, Shoalwater Bay, 3 September 1802, *R. Brown* (holo: BM).

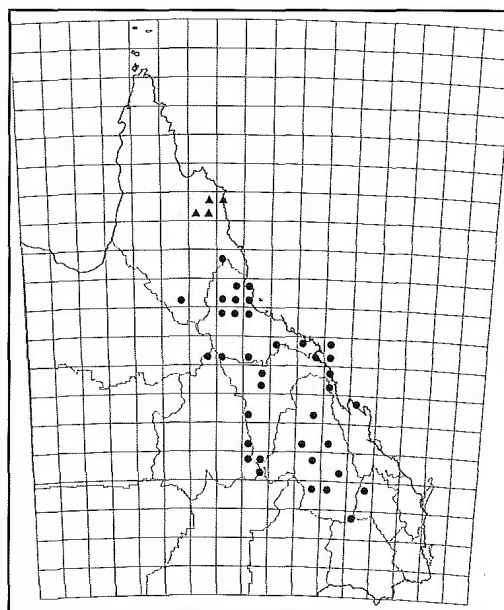
Perennial herb, 12–25 cm high. Glandular hairs present, 0.3–0.6 mm long, glands ellipsoidal. Base of plant woolly, consisting of densely packed eglandular multicellular trichomes up to 9 mm long. Stems greatly reduced, appearing absent, with leaves in basal rosette. Leaves 20–100, spatulate to oblanceolate, grading into indistinct petiole, 20–60(–100) mm long

(including petiole), 4–10 mm wide, glabrous except for short eglandular hairs along margin; apex obtuse, but with slender acumen 2–7 mm long. Scapes 1–3 per plant, 1–1.2 mm in diameter, glandular-hairy. Inflorescences (including scape) 10–23 cm long, central rachis indeterminate, branches monochasially (or rarely dichasially) cymose, glandular-hairy; peduncles 5–10 mm long; bracts ovate to deltate, 1.5–2.5 mm long, glandular-hairy, mucronate. Flowers solitary in axils of bracts. Pedicels 3–6 mm long, glandular-hairy. Hypanthium ellipsoidal, c. 2.5 mm long at anthesis, glandular-hairy throughout. Sepals lanceolate, all free, $1.0\text{--}1.7 \times 0.5\text{--}0.7$ mm, glandular-hairy, apex obtuse or acute. Corolla pink to white, glandular-hairy on tube and petals; tube 1.5–2.0 mm long, with sinus on anterior side only; petals laterally paired, anterior petals $2.5\text{--}3.3 \times 1.0\text{--}1.4$ mm, entire, obtuse; posterior petals $2.5\text{--}3.5 \times 1.0\text{--}1.5$ mm, entire, obtuse. Throat appendages absent. Labellum broadly ovate, 0.6–0.9 mm long, attached at base of anterior sinus, glabrous, apex obtuse, basal appendages 2, minutely papillose. Column of uniform width throughout, 7.5–8.5 mm long, glabrous; stigma cushion-shaped; anthers fringed by short eglandular corona, extending just beyond column. Capsule obovoid to ellipsoidal, 5–6.5 mm long (excluding sepals), 2.5–3 mm wide, faintly 5-ribbed. Seeds spherical with small nipple, 0.4–0.5 mm diameter, dark brown to black, surface colliculose (Fig. 1 G–I).

Selected specimens: **Queensland.** COOK DISTRICT: Portion 200, 6 km NW of Atherton, Jan 1966, *Hyland* 4077 (BRI). NORTH KENNEDY DISTRICT: Mt Abbot, 50 km W of Bowen, Mar 1992, *Bean* 4207 (BRI); 1.5 km (by road) west of Herberton, on Herberton-Petford road, May 1983, *Conn & Clarkson* 1124 (BRI, CANB, HO, MBA, MEL, NSW); Harold Island, Nov 1985, *Batianoff* 3396 & *Dalliston* (BRI); west of Kaban, Nov 1989, *Elick* 85 (QRS); 17 km past Paluma on road to Hidden Valley, Jan 1992, *Forster* PIF9485 (BRI); Blencoe Creek, adjacent to the Cashmere-Kirrama road, Dec 1995, *Wannan* 235 (BRI); Hinchinbrook Island, Jun 1987, *Warrian* CW8217 (BRI). SOUTH KENNEDY DISTRICT: Cape Palmerston N.P., beach hut headland, Sep 1995, *Champion* 1247 & *Pollock* (BRI); 9 miles [14 km] NE of “Glen Avon” H.S., Jul 1964, *Pedley* 1727 (BRI); 12 km SW of “Mt Douglas” H.S., Jun 1992, *Thompson* BUC477 & *Sharpe* (AD, BRI). MITCHELL DISTRICT: c. 15 km SSE of “Warang”, NNW of Torrens Creek, Oct 1988, *Cumming* 8492 (BRI); 20 km from Jericho on Blackall road, Feb 1994, *Forster* PIF15014 & *Bean* (BRI). LEICHHARDT DISTRICT:

“Wandobah”, c. 11 km NE of Dingo, Jul 1987, *Anderson* 4351 (BRI, CANB); Mount Flora-Dingo road, 6 km S of May Downs turnoff, Jul 1992, *Bean* 4674 (BRI); “Humboldt”, 45 km NE of Rolleston, Jan 1996, *Bean* 9584 (BRI); Carnarvon Range, between Roma and Springsure, Oct 1933, *White* 9470 (BRI). PORT CURTIS DISTRICT: west coast of Shoalwater Bay, near Mooly Ck, Apr 1945, *Blake* 15587 & *Webb* (BRI). BURNETT DISTRICT: on Eidsvold-Cracow road, 1 km N of Little Morrow Creek crossing, Jul 1990, *Forster* PIF7006 (BRI, MEL). DARLING DOWNS DISTRICT: north of Waaje tower, Barakula S.F., north of Chinchilla, Mar 1994, *Bean* 7566 (BRI).

Distribution and habitat: *S. eriorhizum* is widespread in Queensland as far north as Atherton, and as far south as the Barakula State Forest near Chinchilla. It extends to the central Queensland coast, and to some continental islands, and inland as far as Jericho and Torrens Creek (Map 1). It inhabits woodlands and heathlands on sandy soils.



Map 1. Distribution of *Stylidium eriorhizum* ● and *S. ramosissimum* ▲.

Phenology: Flowers and fruits can be found throughout the year.

Note: The spelling of the species epithet *eriorhizum* is a matter of some contention. According to Stearn (1992: 261), the second part of a compound Greek word beginning with *rh* should have an additional *r* added to it when preceded by a vowel, but he also points out

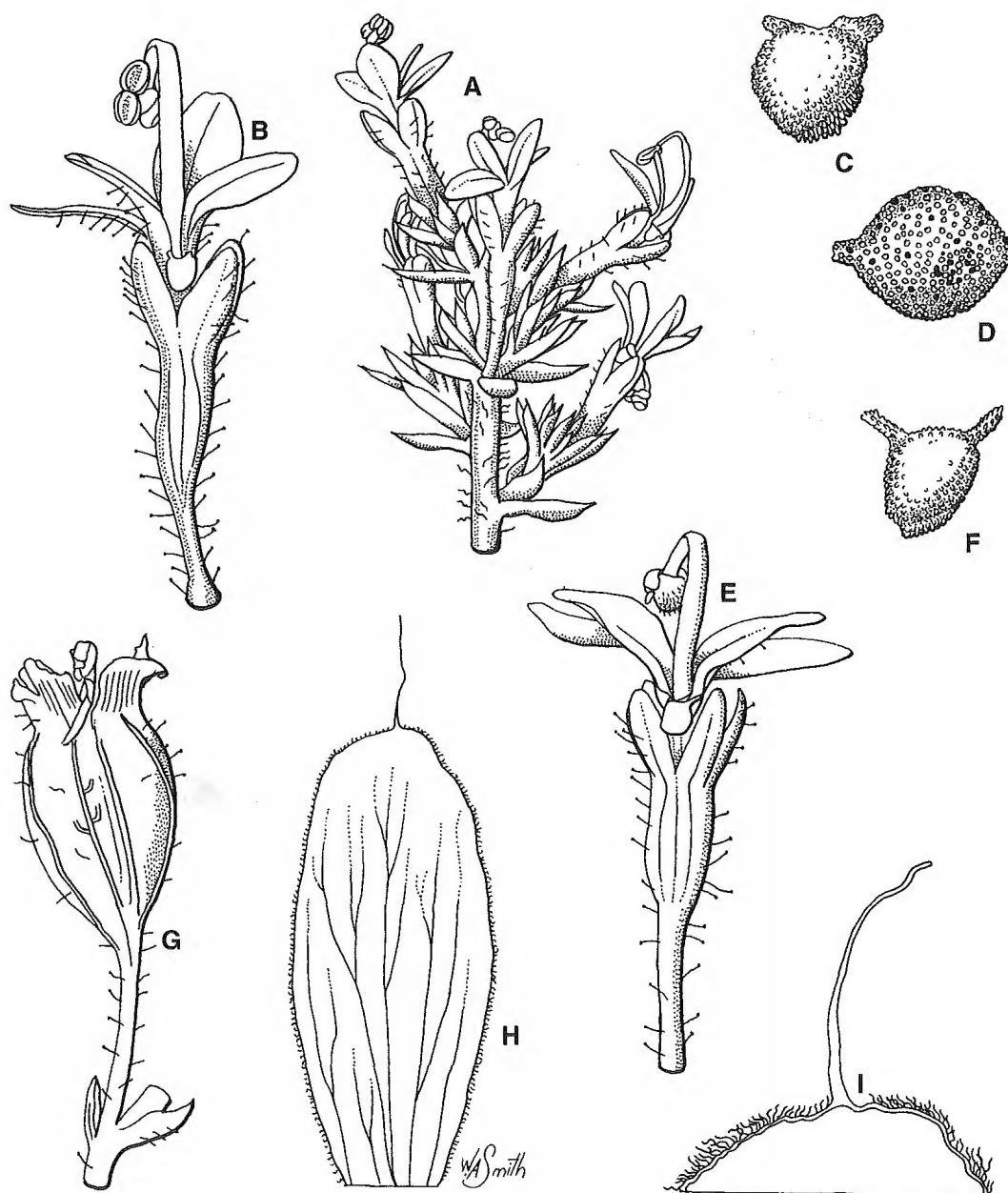


Fig. 1. A–D: *Stylidium ramosissimum*. A. portion of inflorescence $\times 3$. B. flower $\times 6$. C. labellum $\times 20$. D. seed $\times 24$. E–F: *Stylidium leiophyllum*. E. flower $\times 6$. F. labellum $\times 20$. G–I: *Stylidium eriorhizum*. G. fruit $\times 6$. H. leaf $\times 3$. I. close-up of leaf margin $\times 9$. A–C, Forster 12850 & Bean; D, Bean 1740; E–F, Clarkson 7722 & Neldner; G, Johnson 2140; H–I, Forster 3740.

that many reputable authors have omitted this additional *r*, and so it is best regarded as optional and an author's original spelling should be accepted. Brown spelt his epithet *eriorhizum*, and hence this spelling is maintained here. By contrast, Mueller named *Stylidium leptorrhizum* with the additional *r*, and this spelling should also be maintained.

Conservation status: *S. eriorhizum* is a common and widespread species.

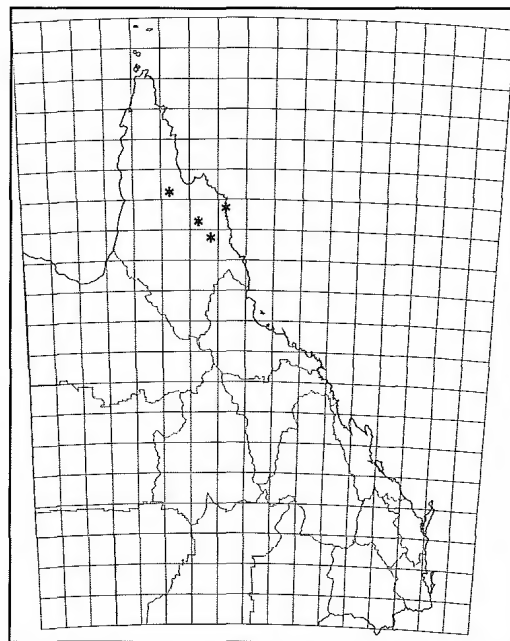
Stylidium leiophyllum A.R.Bean **sp. nov.**
affinis *Stylidio eriorhizo* sed foliis apicibus acutis et marginibus glabris, bracteis 3.5–6.5 mm longis, calycis lobis 2.4–2.8 mm longis et petalis aliquanto longioribus differens. **Typus:** Queensland. COOK DISTRICT: 0.9 km north of the Big Coleman River on the Peninsula Development road, 14°34'S 143°25'E, 21 December 1988, J.R. Clarkson 7722 & V.J. Neldner (holo: BRI; iso: DNA, K, MBA, PERTH, QRS).

Stylidium sp. (Big Coleman River J.R.Clarkson+ 7722) in Henderson (1997).

Perennial herb 8–17 cm high. Glandular hairs 0.25–0.6 mm long, glands ellipsoidal. Base of plant woolly, consisting of densely packed eglandular multicellular trichomes up to 9 mm long. Stems greatly reduced appearing absent, with leaves in basal rosette. Leaves 20–100 per plant, narrowly oblanceolate to narrowly spatulate, grading into indistinct petiole, 28–50 mm long (including petiole), 3–6 mm wide, glabrous, including margins; apex acute, but with slender acumen to 2.5 mm long. Scapes 1–6 per plant, 0.6–1.1 mm in diameter, hairs erect and glandular or crisped and eglandular. Inflorescences (including scape) 8–17 cm long, central rachis indeterminate, branches dichasially or monochasially cymose, glandular-hairy; peduncles 5–7 mm long; bracts deltate, glandular-hairy, 3.5–6.5 mm long, apex acute to mucronate. Flowers solitary in axils of bracts. Pedicels 3–4 mm long, glandular-hairy. Hypanthium ellipsoidal, 2.5–2.8 mm long at anthesis, glandular-hairy throughout. Sepals deltate, all free, 2.4–2.8 × 0.8–1.0 mm, glandular-hairy, apex obtuse to acute. Corolla

pink, glandular-hairy on petals only; tube 1.5–1.8 mm long, with sinus on anterior side only; petals laterally paired, anterior petals 3.0–3.5 × 1.4–1.6 mm, entire, obtuse; posterior petals 3.5–4.0 × 1.8–2.0 mm, entire, obtuse. Throat appendages absent. Labellum ovate, c. 1 mm long, attached at base of anterior sinus, apex obtuse; basal appendages 2, minutely papillose. Column of uniform width throughout, glabrous, 7–7.5 mm long; stigma cushion-shaped; anthers fringed by short eglandular corona, not extending beyond column. Capsule ellipsoidal to obovoid, 3.5–5.2 mm long (excluding sepals), 1.7–3.1 mm wide, faintly 5-ribbed. Seeds globose with small nipple, 0.5–0.6 mm diameter, dark brown, surface colliculose (Fig. 1 E–F, Fig. 2).

Specimens examined: Queensland. COOK DISTRICT: upper reaches of Garden Creek, E of Jowalbinna-Maytown road, Jul 1990, *Bean* 1760 (BRI); south-east of Isabella Falls, towards Cooktown, Jul 1998, *Bean* 13636 (BRI, NSW); north-west of Cooktown near Isabella Falls, May 1970, *Blake* 23418 (BRI); 19 km S of the Palmer River crossing on the Peninsula Development road, Mar 1987, *Clarkson* 6646 & *McDonald* (BRI, K, MBA, PERTH, QRS); 13.3 km from the McIvor River crossing on the Hopevale to Starcke road towards Battlecamp, May 1993, *Clarkson* 10070 & *Neldner* (BRI, K, MBA, PERTH).



Map 2. Distribution of *Stylidium leiophyllum* *.



Fig. 2. Whole plant of *Stylidium leiophyllum* $\times 1$.

Distribution and habitat: *S. leiophyllum* is known from a few locations in south-eastern Cape York Peninsula, between Coen and Mt Carbine (Map 2). It grows in shallow to deep sandy soils, on flat to very hilly sites, which may be rocky. It is associated with species such as *Melaleuca citrolens* Barlow, *M. viridiflora* Sol. ex Gaertn., *Eucalyptus nesophila* Blakely and *Petalostigma banksii* Britten & S. Moore.

Phenology: Flowers are recorded for December and March; fruits are recorded for May and July.

Affinities: *S. leiophyllum* is close to *S. eriorhizum*, but differs by its leaves with acute apices (obtuse for *S. eriorhizum*) and glabrous margins (hairy for *S. eriorhizum*), bracts 3.5–6.5 mm long (1.5–2.5 mm for *S. eriorhizum*), sepals 2.4–2.8 mm long (1.0–1.7 mm for *S. eriorhizum*), and its somewhat larger petals.

Conservation status: *S. leiophyllum* has a scattered and somewhat restricted distribution, but it is not considered rare or threatened at this time.

Etymology: The epithet is from the Greek, *leio*-smooth, and *-phyllus*-leaf. This is in reference to the glabrous leaf margins, which distinguishes it from *S. eriorhizum*.

Stylidium ramosissimum A.R. Bean sp. nov.
affinis *Stylidio eriorhizo*, sed foliis multo minoribus, scapo pilis glandularibus carente, inflorescentia semper dichasialiter ramosa, bracteis longioribus et seminibus majoribus differens. **Typus:** Queensland. COOK DISTRICT: Turtle Rock area, Laura sandstone escarpment, 15°39'S 144°30'E, 22 January 1993, P.I. Forster PIF12850 & A.R. Bean (holo: BRI; iso: DNA, MEL).

Stylidium sp. (Laura L.S. Smith 12050) in Henderson (1997).

Perennial herb 11–17 cm high. Glandular hairs 0.2–0.4 mm long, glands ellipsoidal. Base of plant woolly, consisting of densely packed eglandular multicellular trichomes up to c. 3 mm long. Stems greatly reduced appearing absent, with leaves in basal rosette. Leaves 7–

20 per plant, oblanceolate to broadly spatulate, grading into indistinct petiole, 9–14 mm long (including petiole), 1.8–4.5 mm wide, glabrous except for short eglandular hairs along margin; apex obtuse, but with slender acumen to 1.2 mm long. Scapes 1–5 per plant, with eglandular hairs. Inflorescences (including scape) 11–17 × 1.5–3 cm long, central rachis indeterminate, branches dichasially cymose, glabrous; peduncles 2.5–3 mm long; bracts deltate, glabrous, 2.8–5.0 mm long, mucronate. Flowers solitary in the axils of the bracts. Pedicels 3.0–3.5 mm long, glandular-hairy. Hypanthium ellipsoidal, 3–4 mm long at anthesis, glandular-hairy throughout. Sepals deltate, all free, 2.3–2.8 × 0.9–1.0 mm, glandular-hairy, apex obtuse. Corolla pink, glandular-hairy on petals only; tube 1.6–2.2 mm long, with sinus on anterior side only; petals laterally paired, anterior petals 3.0–3.5 × 1.4–1.7 mm, entire, obtuse; posterior petals 4.0–4.5 × 1.5–1.8 mm, entire, obtuse. Throat appendages absent. Labellum broadly-ovate, c. 0.6 mm long, attached at base of anterior sinus, apex obtuse or retuse, basal appendages 2, minutely papillose. Column of uniform width throughout, glabrous, 7.5–8 mm long; stigma cushion-shaped; anthers fringed by short eglandular corona, not extending beyond column. Fruit ellipsoidal, 4.6–5.0 mm long (excluding sepals), 1.8–2.5 mm wide, faintly 5-ribbed. Seeds spherical except for prominent nipple, 0.7–0.8 mm across, brown, surface colliculose (Fig. 1. A–D, Fig. 3).

Specimens examined: Queensland. COOK DISTRICT: 7 km E of Jowalbinna, Jul 1990, Bean 1740 (BRI); W of Branningham Bluff, c. 25 km NW of Cooktown, Jul 1990, Bean 1974 (BRI); Split Rock gallery, 12.7 km south of Laura, May 1982, Clarkson 4274 (BRI, QRS); c. 5–6 miles [8–10 km] SE of Laura, Oct 1962, Smith 12050 (BRI).

Distribution and habitat: *S. ramosissimum* is confined to a relatively small area at the southern end of Cape York Peninsula, from Jowalbinna to near Cooktown (Map 1). It is confined to sandstone hillsides and escarpments in woodland dominated by *Eucalyptus stockeri* D.J. Carr & S.G.M. Carr, *E. tetradonta* F. Muell., *E. phoenicea* F. Muell. or *E. nesophila* Blakely.

Phenology: Unknown; it possibly flowers and fruits sporadically throughout the year.



Fig. 3. Whole plant of *Stylidium ramosissimum* $\times 1$.

Affinities: *S. ramosissimum* differs from *S. eriorhizum* by its leaves 9–14 mm long (20–60(100) mm long for *S. eriorhizum*), scape lacking glandular hairs, strictly dichasially branched inflorescence (usually monochasial for *S. eriorhizum*), bracts 2.8–5.0 mm long (1.5–2.5 mm long for *S. eriorhizum*) and seeds c. $0.9 \times 0.75 \times 0.75$ mm (0.4–0.5 mm diameter for *S. eriorhizum*).

S. ramosissimum differs from *S. leiophyllum* by its labellum only 0.6 mm long (obtuse and 1.0 mm long for *S. leiophyllum*), the glabrous peduncles and bracts, and the leaves (including petioles) 9–14 mm long with hairy margins (20–60(–100) mm long with glabrous margins for *S. leiophyllum*).

Conservation status: *S. ramosissimum* has a scattered and somewhat restricted distribution, but it is not considered rare or threatened at this time.

Etymology: The specific epithet is derived from the Latin word *ramosissimus*, meaning very much branched. This is in reference to the inflorescence.

Acknowledgements

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